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TOP NEWS: AT&T/Philips, French ready to cement deal, p.15

Cover: Three int'l features look at rural communications . . .

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VOLUME 209
No. 26

telephony

News of the Week 15
GEC-Plessey merger talks focus on future of System X
• AT&T inching closer to deal with French
• GE-RCA merger targets global competition

INTELSAT OKs domestic service 16
In the U.S. Capital: Rules set for rate of return proceedings • Washington Round-Up
Victor Block

Quality will tell 29
As We See It: Quality will determine the success or failure of products

COVER STORY: Cellular service in Malaysia 32
Mobile technology provides economic service to remote areas and satisfies the country's needs
Graham Langley

Tanzania's telecom troubles 34
This country's attempt to provide telecommunications service throughout society has been less than successful
Heather E. Hudson

36 Digital service on an Indian reservation
The widely spaced villages posed problems, but a feasible system was designed
Gaylord Ellerman and James Underwood

42 Privatization: the missing link
The trend toward privatization should benefit developing countries
Andres B. Bande

44 New protocol for multipoint radio systems
This protocol increases spectrum use efficency and provides fast response
Tho Le-Ngoc

54 NATA '85: belle of the ball
The 7100 attendees found the exhibitors the life of the party and the seminars wall flowers
Larry Lannon and Susan Ubis

58 Technology stars at IWCS
Scientists from around the world played show and tell with the latest advancements
Susan Ubis

DEPARTMENTS

Advertisers' Index 86
In the U.S. Capital 16
Letters 12
Meetings 11
Merits and Milestones 88

71 Moving Around Industry
60 New Products and Services
15 News of the Week
59 Plant Man's Notebook
9 Reader Service Card

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Bringing cellular service to Malaysia

GRAHAM LANGLEY

THE GROWTH of Malaysia's telephone network has been given a tremendous boost by a government decision made about 3 years ago to award several contracts for development work.

Contractors are now responsible for supplying and installing all needed new exchanges in the form of locally assembled Ericsson's AXE and Nippon Electric Co.'s NEAC 61 systems. A new national digital microwave system from Standard Elektrik Lorenz A6 of West Germany and a large number of pulse code modulation systems, locally assembled by Marconi of Italy, are also used. For local cable networks the country has been divided into four geographic zones, each zone allocated to a private local company. The local companies are responsible for forecasting future demands for telecommunications services, recommending sites needed for new exchanges and the boundaries of their service areas, and planning and installing all necessary external plant, including manholes, duct systems and distribution cables, to satisfy projected future demands.

Each of these four contractors has until 1988 to provide over 400,000 extra effective cable pairs between exchanges and subscribers' distribution points, a total of over 1.7 million extra subscriber lines. The scale of all this development and its impact on the network is illustrated by recent telephone statistics shown in Table 1.

Although Malaysia's industrialization is proceeding rapidly, especially in the Kelang Valley area between Kuala Lumpur, the national capital, and the peninsula's west coast, the majority of the nation's land mass is still tropical forest land. The percentage of the population living in urban areas has indeed risen from 27% in 1970 to 34% in 1980, but a great many of Malaysia's villages (kampongs) are in comparatively isolated areas many miles from the nearest town.

As part of its drive to expand the telecommunications network—the national aim is a phone in every home within 20 years—the Malaysian Telecommunications Dept. decided to kill two birds with one stone and replace its limited, old-style very high frequency car radio service with a modern cellular radio system. This new cellular system will also provide basic telephone communications to many isolated areas where service using conventional distribution plant, either cable or radio, is beyond the government's present budget.

The Malaysian cellular system is based on the Nordic Mobile System, with radio base stations and exchanges provided by Ericsson. The use of 400 megahertz (MHz) for the first phase of the system has provided almost nationwide coverage to this 329,749 square

Government of Malaysia photo

Bringing telecommunications services to rural and remote areas presents many problems for service providers. For countries such as Malaysia, whose national mosque in Kuala Lumpur is shown above, the cost-effective answer is cellular.

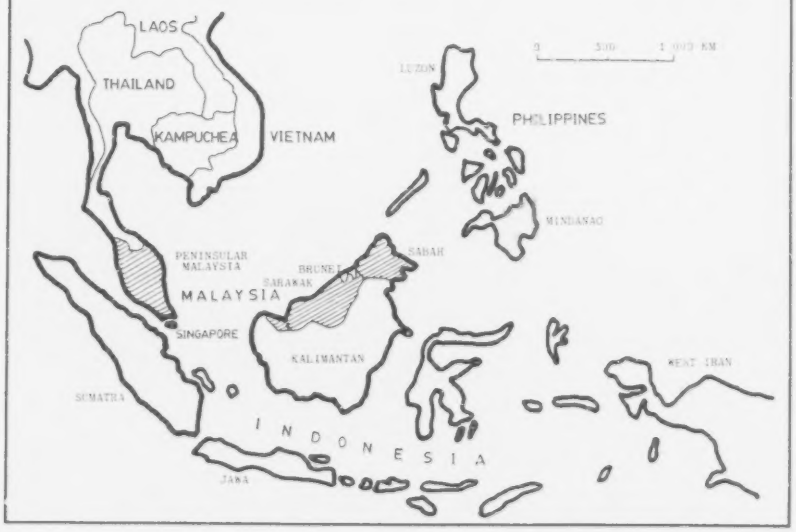
Graham Langley is a telecommunications consultant with many years experience in Singapore and Malaysia. He is also author of *Telephony's Dictionary*.

Table 1 Development of Malaysian telephone network

Date	Total number of working telephone lines Malaysia	Growth rate % per year	Telephone lines per 100 people	Total number of waiters for telephone service
31 Dec 82	585 387	20%	4.3	189 808
31 Dec 83	700 097	20%	5.0	199 831
31 Dec 84	849 129	21%	5.9	190 542

(Total population is growing at some 2.3% per year, 1980 census population was 13.14 million)

Map of Southeast Asia



kilometer (km) country by only 86 radio base stations, most of which have a coverage area of about 30 km. Up to 32 channels are at present available from each base station. The highest station in the whole system is on Mt. Kinabalu in Sabah, 2231 meters (m) above sea level. There also are stations in Malaysia on Kedah Peak at 1217 m and Guong Ulu Kali at 1772 m. These high altitude stations serve larger areas than those at lower sites.

For administrative purposes the country is divided into five service areas, each served by one Ericsson AXE mobile exchange. The mobile exchanges are at Subang Jaya near Kuala Lumpur, Seberang Jaya near Penang, Pelanggi in Johore State, Kota Kinabalu in Sabah and Kucing in Sarawak. Each of these areas acts as the home area for a mobile subscriber, and all calls addressed to such subscribers are directed first to the home exchange and then to the mobile.

Mobile stations are not cheap in Malaysia. Customers must obtain their own radio terminal equipment from one of the approved suppliers. Typical costs are $7000 or over per set. An initial deposit of $300, an access fee of $720 and a radio license fee of $50 per year must be paid to Telecoms. Call fees are also charged. These vary with distance and time but are higher than fees charged for ordinary long distance calls even for calls between mobiles in the same local area: $0.90 for a 3 minute mobile call within the same area compared with only $0.10 for a 3 minute local call from a cable-fed telephone. Although Malaysia is a developing country, it has a lot of very wealthy people willing to pay these comparatively high charges. There were 600 mobile subscribers within a month of the opening of the new system.

A special pay phone interface has been developed, enabling standard pay phones to be used as static stations on this cellular radio system. In remote areas the pay phones will use a solar panel power supply.

The first order for 500 of these special rural pay phone units has been placed. Delivery is expected by the end of 1985. Call fees from these pay phones are to be the same as those from ordinary cable-fed pay phones, so there will be a substantial measure of cross-subsidization: The well-to-do users of car phones can be happy in the knowledge that they are, in effect, making affordable telephone service possible to a great many remote rural areas. □